provided by placing an external strain relief sleeve **540** around the end portion of sleeve **504** abutting the housing of electronic device **520**. Strain relief sleeve **540** can be made of the same material as the rest of sleeve **504** or a different (e.g., stiffer) material. In either case, strain relief sleeve **540** locally increases the diameter of cable **500**, which may require a designer to increase the z-height of electronic device **520** so that cable **500** is not thicker than electronic device **520**.

[0035] In contrast, cables according to various embodiments described herein can provide strain relief without an external strain relief sleeve or increased cable thickness. FIG. **6** shows a simplified cross section view of an assembly **601** according to some embodiments. Cable **200** (as described above with reference to FIG. **2**) has a core **202** and an outer sleeve **204**. Outer sleeve **204** includes a stiff layer **212** and a soft layer **211** having variable thicknesses to provide longitudinal sections **112**, **112**, **113** having different stiffness as described above, while the total thickness of outer sleeve **204** remains constant along its length. Stiff end section **112** abuts the housing of electronic device **620**, and transition section **113** provides a gradual transition from stiff end section **112** to flexible central section **111**, thereby providing strain relief without locally increasing the diameter of cable **200**. Where the minimum z-height of electronic device **620** is constrained by the cable diameter, the absence of an external strain relief sleeve may allow for a reduced height of electronic device **620** as compared to electronic device **520** of FIG. **5**.

[0036] Similarly, FIG. **7** shows a simplified cross section view of an assembly **701** according to some embodiments. Cable **100** (as described above with reference to FIG. **1**) has a core **102** and an outer sleeve **104**. Outer sleeve **104** includes a variable mixture of soft and stiff materials to provide longitudinal sections **112**, **112**, **113** having different stiffness as described above, while the total thickness of outer sleeve **104** remains constant along its length. Stiff end section **112** abuts the housing of electronic device **720**, and transition section **113** provides a gradual transition from stiff end section **112** to flexible central section **111**, thereby providing strain relief without locally increasing the diameter of cable **100**. Where the minimum z-height of electronic device **720** is constrained by the cable diameter, the absence of an external strain relief sleeve may allow for a reduced height of electronic device **720** as compared to electronic device **520** of FIG. **5**.

[0037] While the invention has been described with reference to specific embodiments, those skilled in the art with access to the present disclosure will appreciate that variations and modifications are possible. For example, while the examples shown include cables where the stiff regions are at the ends, it may be desirable to have one or more stiff regions disposed at other locations along the length of the cable in addition to or instead of at the ends. Accordingly, a stiff section need not be at the end of a cable, and a soft region can be at the end of the cable. Similarly, the lengths of stiff and soft regions can be varied as desired. The length of a transition region can also be varied. In some embodiments, the length of the transition region can be similar to the length of a neighboring stiff region (e.g., the same length or half as long or twice as long). Where the cable sleeve is formed from multiple layers, any number of layers of material can be used, including materials having different stiffness characteristics, and the order of layers can be chosen according to various considerations such as durability. Further, while the foregoing description makes reference to extrusion processes for fabricating a cable sleeve, other processes can also be used.

[0038] Cables of the kind described herein can be used in a variety of applications. Examples include power and/or data transfer cables for consumer electronic devices. The ends of the cable can be captively coupled into an active electronic device or into a connector (e.g., a plug-type connector) to allow the cable to be plugged into a device such as a power supply or any active electronic device. In some embodiments, a cable may include one or more optical fibers or other optical signal conductors in addition to or instead of electrically conductive wires or other electrical signal conductors.

[0039] Accordingly, although the invention has been described with respect to specific embodiments, it will be appreciated that the invention is intended to cover all modifications and equivalents within the scope of the following claims.

What is claimed is:

1. A cable comprising:

a cable core comprising one or more signal conductors; and

an outer sleeve surrounding the cable core, the outer sleeve having a uniform thickness and further having a first longitudinal section having a first stiffness, a second longitudinal section having a second stiffness, and a third longitudinal section between the first and second longitudinal sections, wherein the second stiffness is greater than the first stiffness and wherein a stiffness of the third longitudinal section varies between the first stiffness and the second stiffness.

2. The cable of claim **1** wherein the second stiffness corresponds to a rigid cable and the first stiffness corresponds to a flexible cable.

3. The cable of claim **1** wherein the second longitudinal section is an end section of the cable.

4. The cable of claim **1** wherein the signal conductors include one or more electrically conductive wires.

5. The cable of claim **1** wherein the outer sleeve comprises a first layer made of a soft material and a second layer made of a stiff material and wherein:

in the first longitudinal section, a thickness of the first layer exceeds a thickness of the second layer;

in the second longitudinal section, the thickness of the second layer exceeds the thickness of the first layer; and

a total thickness of the outer sleeve is constant along the length of the cable.

6. The cable of claim **5** wherein the first layer is inboard of the second layer.

7. The cable of claim **5** wherein the second layer is inboard of the first layer.

8. The cable of claim **5** wherein, in the third longitudinal section, the thickness of the first layer and the thickness of the second layer vary along the length of the third longitudinal section such the total thickness of the outer sleeve is constant.

9. The cable of claim **1** wherein the outer sleeve is formed of a mixed material comprising a stiff polymer and a soft polymer and wherein:

in the first longitudinal section, the mixed material contains a first ratio of the stiff polymer to the soft polymer,